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UD Engineering Students' Research Being to Possibly Save Lives and Environment in Developing Countries

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NEWS RELEASE

UD ENGINEERING STUDENTS' RESEARCH BEING USED TO POSSIBLY SAVE LIVES AND ENVIRONMENT IN DEVELOPING COUNTRIES

DAYTON, Ohio — When University of Dayton engineering student Rajeev Sinha thought about studying heating systems for buildings, he never dreamed those heating systems would comprise clay-brick cookstoves or that the buildings would be modest homes in developing Third-World countries.

In fact, his engineering experience at UD thus far has opened his mind — and heart — in ways he didn't anticipate when he decided to follow in his father's footsteps as a mechanical engineer, said Sinha, a junior who wants to specialize in HVAC and other building systems.

On Nov. 15, Sinha and the other students in Margaret Pinnell's introduction to materials lab will test bricks they made earlier this semester to see how well they would function in cookstoves being developed for use in some Central American countries. Pinnell will send a report on the students' findings to Aprovecho, a nonprofit organization that will use the analysis to design alternative stoves for homes where residents cook on open fires on the ground, known to cause severe respiratory problems — and even death — especially in children.

"Honestly, I never considered service when I considered engineering, and I never considered how the work I did could directly affect anyone," he said. "This project has reversed all that. It's been a lot of work and a lot of time, and I already have a lot of extracurricular commitments. But this project has helped us understand that we need to temper our work and busy lives with humanity, and that there are other considerations to keep in mind aside from just the technical aspect of our jobs as we achieve our goals."

Sinha's response to the course is exactly what materials lab teachers Pinnell and Leon Chuck want to see in their students. As assistant professors of mechanical and aerospace engineering, Pinnell and Chuck supervise various aspects of the cookstove project in their labs.

"It's especially important for engineering students to be exposed to the idea of community service because they typically don't think engineers can have an impact on people," Pinnell said. "But they can have a huge impact, and it can be for better or for worse. So we

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want them to understand that, as engineers, not only can they have an impact, they have an obligation to use their God-given talents to serve society."

The cookstove project was originally designed as a one-semester enterprise through ETHOS (Engineers in Technical, Humanitarian Opportunities of Service), a program founded in spring 2001 by an interdisciplinary group of engineering undergraduates at UD to facilitate service-learning opportunities. Now in its fourth semester, however, the project has taken on a life of its own as Aprovecho — pleased with the work and analysis provided by UD — continues to request additional studies from engineering students, Pinnell said.

During the first three semesters, students characterized the mechanical and physical properties of various brick materials sent them by Aprovecho. This semester, students made their own bricks according to formulas Aprovecho provided. They'll analyze their work by putting the bricks through a series of compression, density, thermal-cycling and other stress tests.

The project is important because it provides both hands-on experience appropriate to their chosen fields and practical solutions for real-world problems, Pinnell said. Aside from health dangers and other threats, open cooking fires are also inefficient, requiring large amounts of firewood and adding to the depletion of resources in the surrounding environment.

Pinnell said the cookstove project falls into the category of appropriate technology, defined by Aprovecho as energy-efficient, nonpolluting, renewable technology that reflects current research but that can also be developed using resources readily available in most countries.

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